

Claims

[c1] 1. said data segments being received and assembled to said data block at a receiving end of said transmission system through said data transmission channels.

[c2] 2. The method of claim 1 further comprising a size and a quantity of said data segments being determined upon communication between said transmitting end and said receiving end through said data transmission channels.

[c3] 3. The method of claim 1 further comprising statuses of said data transmission channels and said data segments being maintained by said transmitting end of said transmission system, and one of said data transmission channels being determined to transmit said data segments based on statuses of said data transmission channels and statuses of said data segments.

[c4] 4. The method of claim 3 further comprising said data segment that is under transmission being simultaneously transmitted via at least one of said data transmitting channels that is idling when none of said data segments being to-be-transmitted.

- [c5] 5.The method of claim 1, wherein said data segments are numbered by said transmitting end and are assembled to said data block thereby said receiving end.
- [c6] 6.A system for transmitting data through a multi-path bus in a transmission system, comprising a plurality of transmitting end transceivers; a plurality of receiving end transceivers, coupling to said plurality of transmitting end transceivers via a plurality of data transmission channels; a transmitting end arbiter, coupling to said transmitting end transceivers for dividing a data block into a plurality of data segments for transmission through said data transmission channels; and a receiving end arbiter, coupling to said receiving end transceivers for receiving said data segments through said data transmission channels and assembling said data segments to said data block.
- [c7] 7.The system of claim 6, wherein a size and a quantity of said data segments are determined upon communication between transmitting end arbiter and said receiving end arbiter through one of said data transmission channels before said data block is transmitted.
- [c8] 8.The system of claim 6, wherein said data segments and

said statuses of said data transmission channels are maintained by said transmitting end arbiter, and one of said data transmission channels is determined to transmit said data segments based on said statuses thereof.

- [c9] 9.The system of claim 8, wherein when status of one of said data transmission channels is determined idle by said transmitting end arbiter, none of said data segment is to be transmitted, and one of said data segments is being transmitted, said one of said plurality data segment is transmitted simultaneously by said transmitting end arbiter through said data transmission channel that is determined idle.
- [c10] 10.The system of claim 6, wherein said data segments are numbered by said transmitting end arbiter, and said data block is assembled to said data block accordingly.
- [c11] 11.The system of claim 6, wherein said data transmission channels are optical fiber channels.
- [c12] 12.The system of claim 6, wherein said data transmission channels are universal serial bus channels.
- [c13] 13.A transmitting end for a multi-path bus data transmission, comprising:
 - a plurality of transmitting end transceivers, providing a plurality of data transmission channels; and

a transmitting end arbiter, coupling to said plurality of transmitting end transceivers, for dividing a data block into a plurality of data segments for transmission through said data transmission channels.

- [c14] 14. The transmitting end of claim 13, wherein a size and a quantity of said data segments are requested by said transmitting end arbiter for said receiving end through one of said data transmission channels before said data block is transmitted.
- [c15] 15. The transmitting end of claim 13, wherein statuses of said data segments are maintained by said transmitting end arbiter, and one of said data transmission channels is determined for transmitting said data segments according to statuses of said data segments and said data transmission channels.
- [c16] 16. The transmitting end of claim 15, wherein said data segment that is under transmission is transmitted simultaneously through said data transmission channel that is idle when status of one of said data transmission channels is determined idle by said transmitting end arbiter, none of said plurality data segments is to be transmitted, and one of said data segments is being transmitted.
- [c17] 17. A receiving end for receiving a data block having a

plurality of data segments through a plurality of data transmission channels, comprising:
a plurality of receiving end transceivers, providing said data transmission channels; and
a receiving end arbiter, coupling to said receiving end transceivers, for receiving said data segments through said data transmission channels and assembling said data segments to said data block.

[c18] 18. The receiving end of claim 17, wherein a size and a quantity of said data segments are requested through one of said data transmission channels, said size and said quantity that are valid are responded by said receiving end.